

APPENDIX C
SUMMARY OF DECLARED AND UNDECLARED UNDERGROUND BASINS

Underground Basin	Aquifer Occurrence	Depth to Water	Well Yields	Dominant Chemical	Water Quality¹	Recharge	Discharge	Problems
Undeclared Basin	Bone Spring Limestone; Basin-fill Alluvium	Crow Flats: <200 feet (61 meters); Upland areas: >400 feet (122 meters); Southwestern section: >500 feet (152 meters)	Bone Spring Limestone: 350 to 3,620 gpm	Sulfate	Bone Spring Limestone: Hardness: 885 mg/L (avg.); Low to moderate salinity Basin-fill: Hardness: 353 to 2,500 mg/L; Saline water; High Sulfate, Chloride, and Nitrate levels	Basin-fill: precipitation (flash floods); Bone Spring Limestone: precipitation where formations are exposed at surface	Basin-fill: evaporation from alkali flats	Declining water levels in Crow Flats due to withdrawals; possible water quality deterioration from alkali flats due to withdrawals; impotable water in basin-fill aquifer
Rio Grande Basin	Santa Fe Group (basin-fill); Valley-fill (floodplain, channel deposits); Mountains (igneous, volcanic, sedimentary units)	Santa Fe Group: <500 feet (152 meters); Valley-fill: <30 feet (9 meters)	Valley-fill: >300 gpm	Sulfate, Chloride, Sodium Bicarbonate, Calcium Magnesium Bicarbonate	Valley-fill: Hardness: >180 mg/L; TDS (average); Basin-fill: Hardness: 120 to 180 mg/L; Freshwater from 10 to 3,500 feet in places; Saline water very deep and at edge of aquifer	Santa Fe: precipitation (flash floods), percolation from perennial streams; Valley-fill: precipitation, movement from Rio Grande	NA	Valley-fill and Basin-fill: contamination with nitrates, ammonia, salinity, organic compounds, and petroleum products

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Lower Rio Grande	Santa Fe Group (Basin-fill); Valley-fill (floodplain, channel deposits); Mountains (igneous, volcanic, sedimentary units)	Santa Fe Group: <500 feet (152 meters); Valley-fill: <30 feet (9 meters); Small area just east of Caballo Mountains: >500 feet (152 meters)	Valley-fill near Truth or Consequences and Caballo Reservoir: 100 to 300 gpm	Sodium Bicarbonate, Sulfate, Calcium Magnesium Bicarbonate	Basin-fill: Hardness: 120 to 180 mg/L; Freshwater from 10 to 3,500 feet; Saline water very deep and at edges; Valley-fill: Salinity: 681 mg/L TDS (average); Nitrates	Santa Fe: precipitation (flash floods), percolation from perennial streams; Valley-fill: precipitation, movement from Rio Grande	NA	Valley-fill and Basin-fill: contamination with nitrates, ammonia, salinity, organic compounds, and petroleum products
Hot Springs Basin	Igneous, volcanic, sedimentary units in mountains; Santa Fe Group (basin-fill); Valley-fill; Pennsylvanian and Permian Units	Valley-fill: <10 feet (3 meters); Basin-fill: <500 feet (152 meters); Extreme west side of Black Mountains: >500 feet (152 meters)	NA	Calcium Magnesium Bicarbonate	Valley-fill: Sulfate: 52 to 334 mg/L; Chloride: 90 to 470 mg/L	NA	Valley-fill: Rio Grande	Mixing of thermal and nonthermal waters

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Las Animas Creek Basin	Igneous, volcanic, sedimentary units in mountains; Paleozoic Units; Santa Fe Group; Valley-fill	Valley-fill: shallow water table; Santa Fe Group and Paleozoic Units: <500 feet (152 meters); Western side of mountains: >500 feet (152 meters); along Las Animas Creek drainage area: 2 to 355 feet (.61 to 108 meters)	NA	Calcium Magnesium Bicarbonate	Salinity: 0 to 500 mg/L (TDS)	Santa Fe, Valley-fill: precipitation on drainage areas	Valley-fill: downstream water movement to springs	Construction of diversion ditches, wells, and Caballo Dam have modified the hydrologic cycle; well drawdown
Tularosa Basin	Basin-fill (bolson-fill); Alluvium on mountain slopes; Sedimentary units in northern section; Mountains (igneous, volcanic, or sedimentary units)	Alluvium: shallow water table; Basin-fill: <500 feet (152 meters); Mountains on east and west sides of basin: generally >500 feet (152 meters); Tularosa-Alamogordo area: 19 to 172 feet (6 to 52 meters)	High on alluvial fans just west of the Sacramento Mountains: 300 to 1,400 gpm; central part of basin and toes of alluvial fans: <100 gpm	Sulfate, Chloride; Small area near WSMR: Sodium Bicarbonate	Basin-fill: Hardness: 300 mg/L; Salinity: 500 to 1,000 mg/L (TDS); East side of basin: Salinity: 1,000 to 4,000 mg/L (TDS); Central basin: Salinity: 35,000 mg/L (TDS); Sulfate: 250 to 500 mg/L; Chloride: high levels	Alluvium: precipitation and infiltration; Basin-fill: floodwaters infiltrating from westward flowing streams; Sedimentary units: precipitation and infiltration in upland areas through fractures and vugs	NA	Impotable, saline water due to evaporation of salts in the basin; Freshwater only on east and west sides of south part of basin

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Nutt-Hockett Basin	Basin-fill	<500 feet (152 meters)	<100 gpm	Sodium Bicarbonate	Salinity: 0 to 1,000 mg/L (TDS)	NA	NA	NA
Mimbres Valley Basin	Basin-fill; Mountains (igneous, volcanic, or sedimentary units)	<500 feet (152 meters)	Basin-fill, <100 gpm	Calcium Magnesium Bicarbonate; Southwestern edge of Sierra County: Sodium Bicarbonate	Basin-fill: Salinity: 0 to 500 mg/L (TDS)	NA	NA	NA
Hueco Basin	Basin-fill	200 to 500 feet (61 to 152 meters)	NA	Sulfate	Salinity: 0 to 3,000 mg/L (TDS)	Water movement from Tularosa Basin	Seepage to Rio Grande withdrawals for municipal, industrial, and military activities	Declining water levels due to withdrawals; Saline water, freshwater only along western edge and northern area of basin
Penasco Basin	Mountains (igneous, volcanic, sedimentary units); San Andres Limestone; Yeso Formation	<500 feet (152 meters)	NA	NA	Limestone: Salinity: 434 mg/L (TDS) (Maximum); Nitrates: 6.2 mg/L (average)	Yeso Formation: precipitation and infiltration	Water movement to springs or movement downdip through formation	NA

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Gila-San Francisco Basin	Mountains (igneous, volcanic, or sedimentary units)	Southeastern section: >500 feet (152 meters); majority of basin: <500 feet (152 meters)	<100 gpm	Sodium Bicarbonate; Southwestern corner of basin: Calcium Magnesium Bicarbonate	Salinity: 0 to 500 mg/L (TDS)	NA	NA	NA
Hondo Basin	Limestone; Mountains (igneous, volcanic, or sedimentary units)	<500 feet (152 meters); northwestern part of basin: >500 feet (152 meters)	NA	NA	NA	NA	NA	NA

SOURCE:

Anderhom et al. 1995; Brady et al. 1984; Bureau of Land Management 1984; Cox et al. 1962; Davie et al. 1967; Garza and McLean 1971; Hood 1960; Ong 1988; Orr et al. 1992; Reeder et al. 1959; State Engineer's Office 1957; Thompson et al. 1984; West et al. 1965

NOTES:

Water quality information not available for the Hondo Declared Basin

NA = information not available